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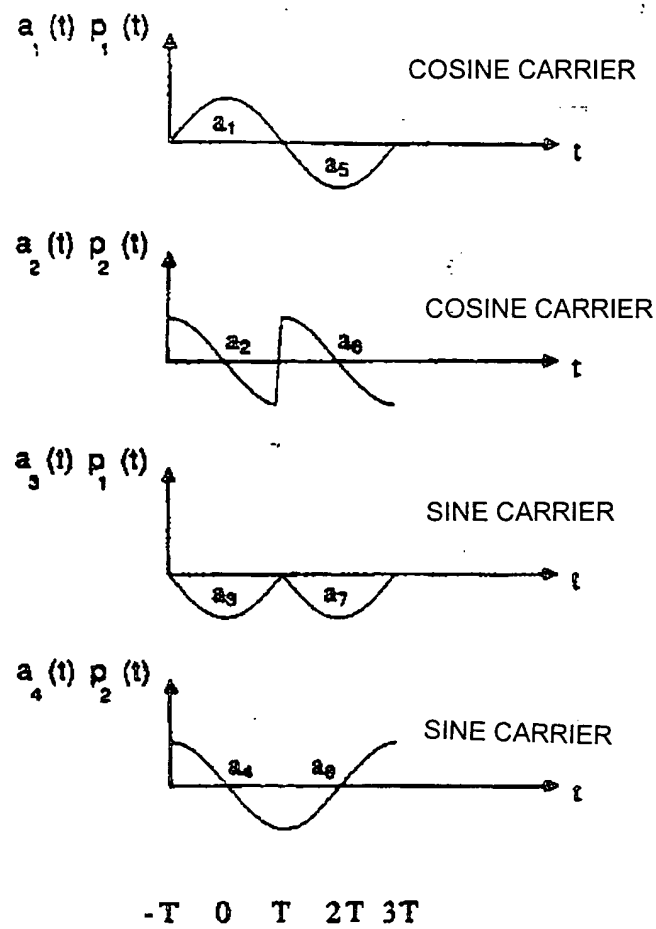


Fig. 1

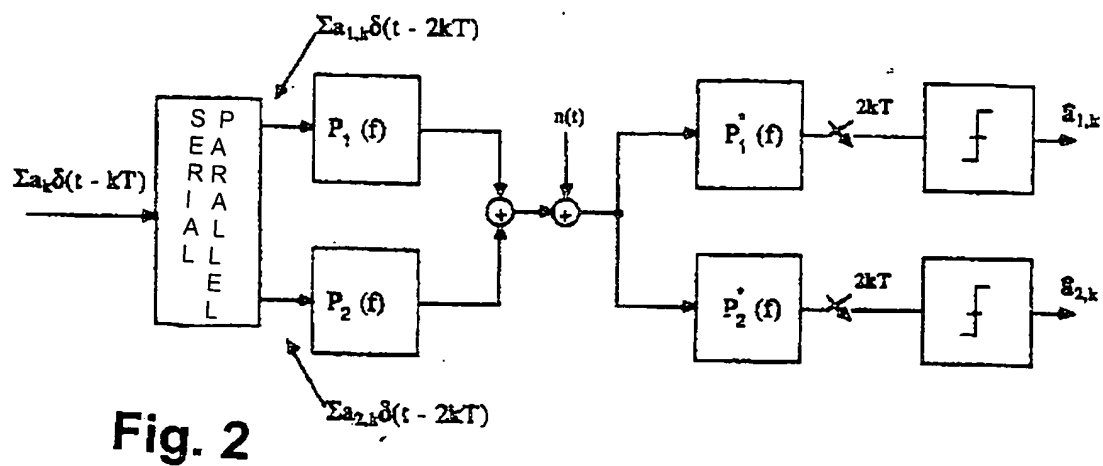
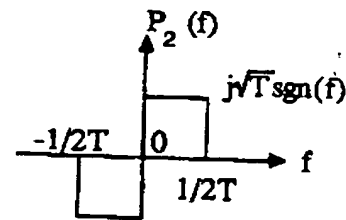
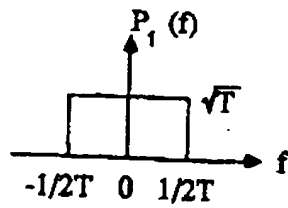
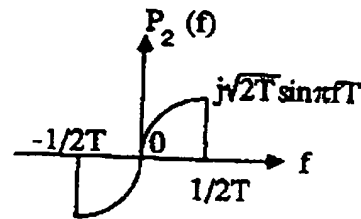
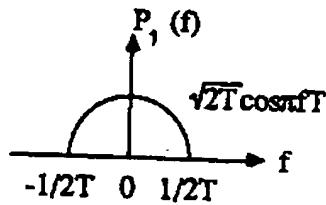


Fig. 2

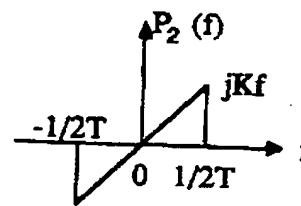
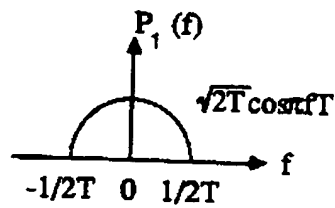
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(a)



(b)



(c)

Fig. 3

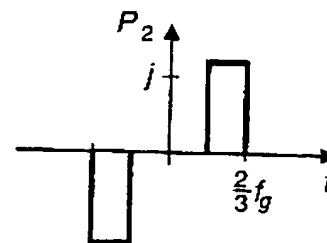
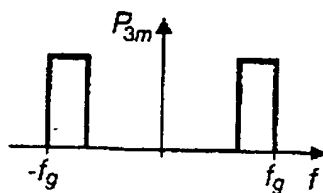
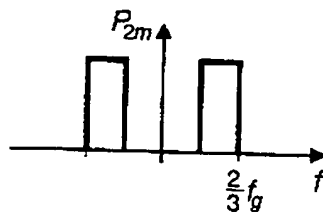
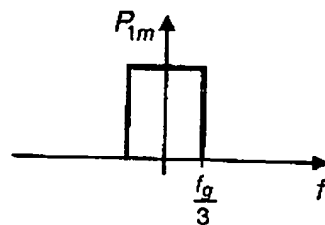


Fig. 11

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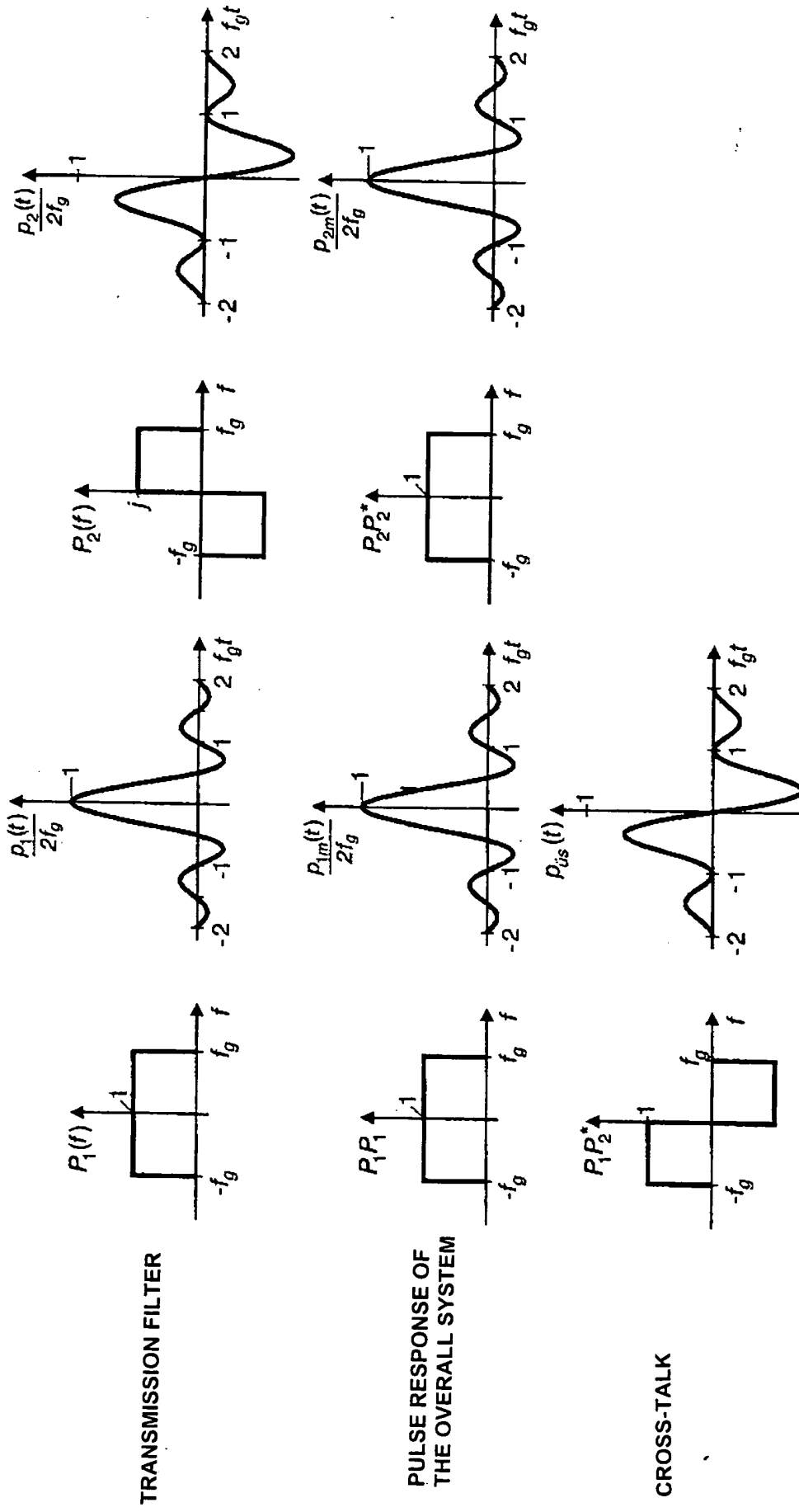


Fig. 3a.

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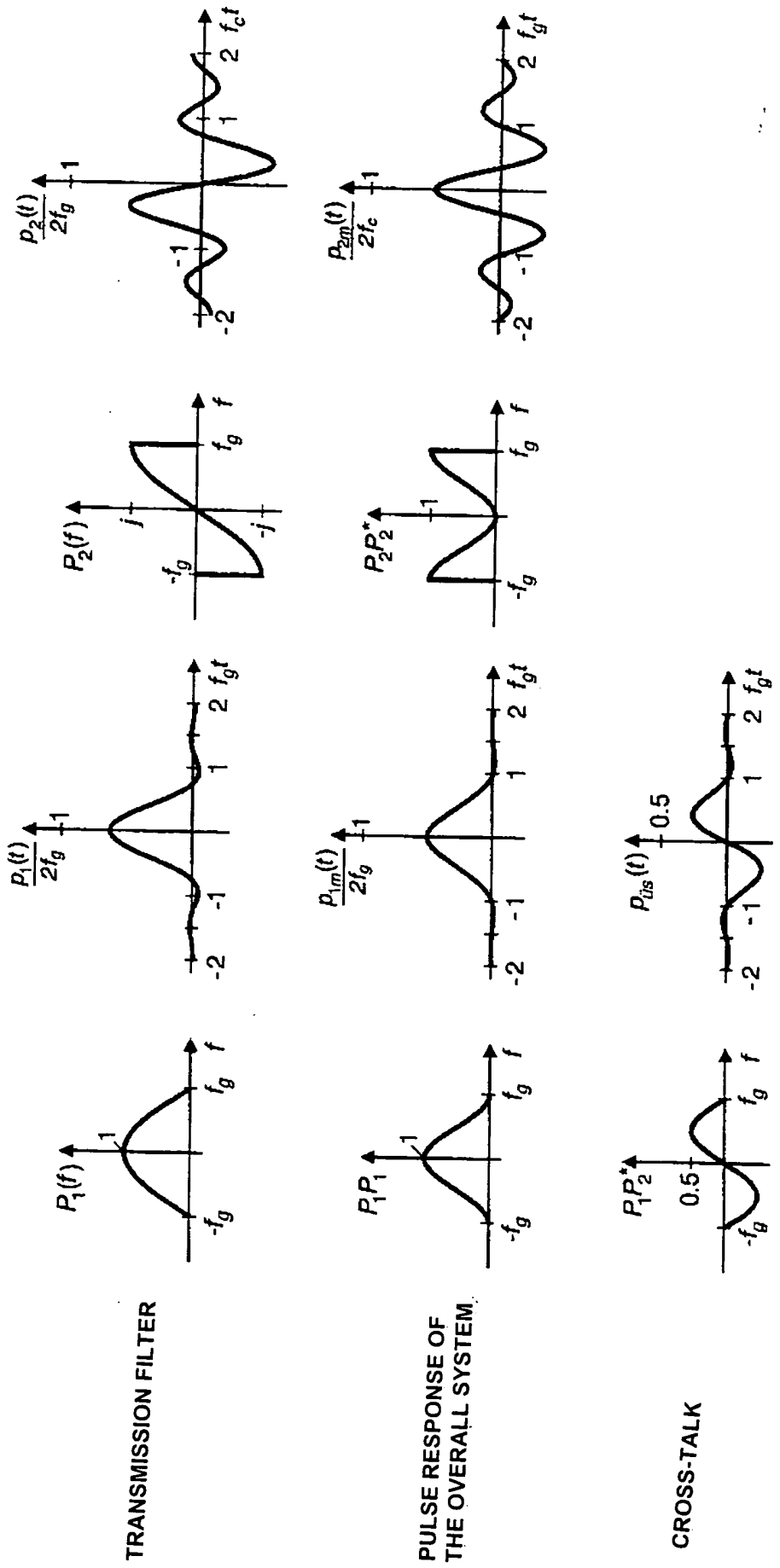


Fig. 3b

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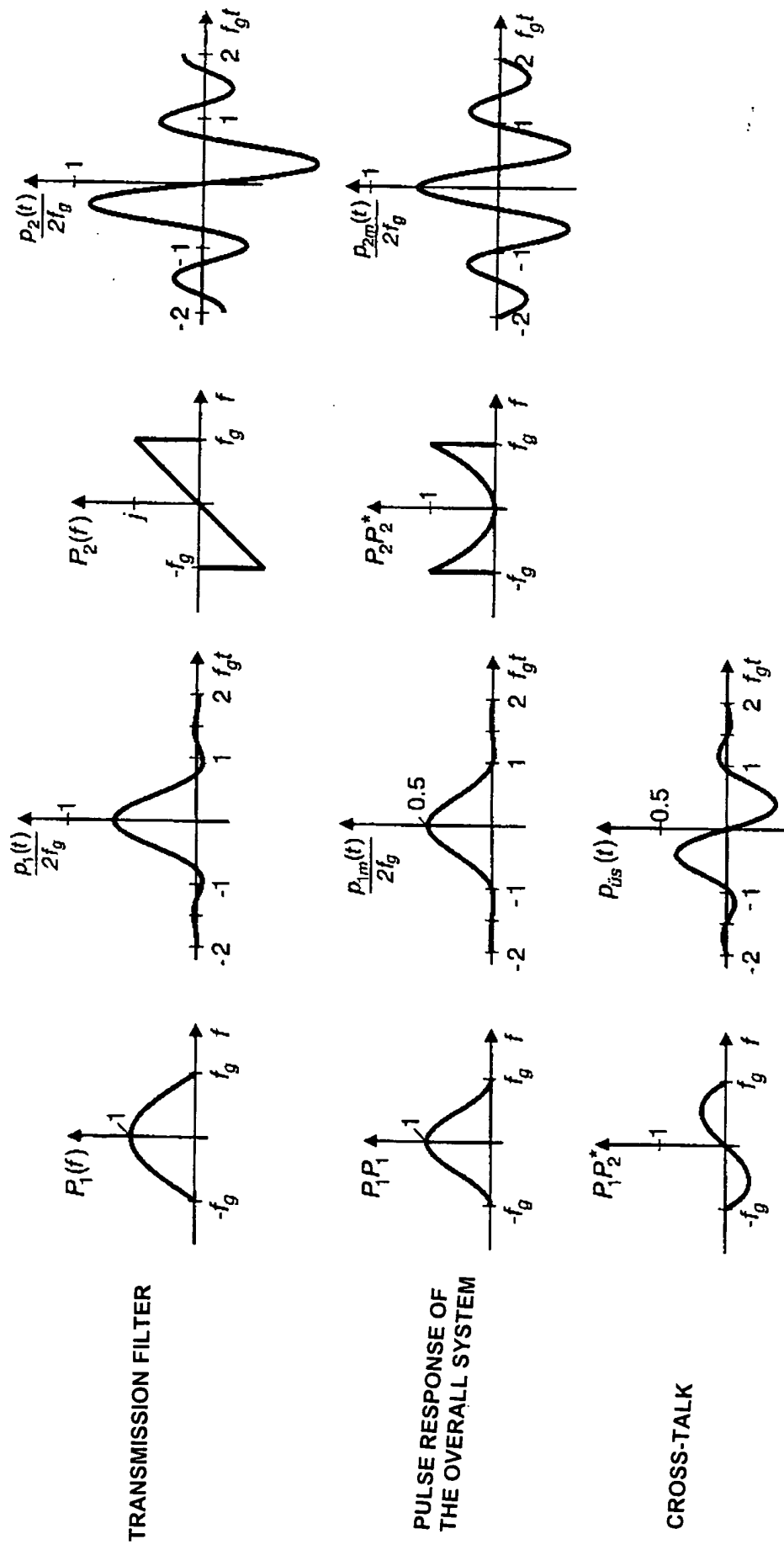
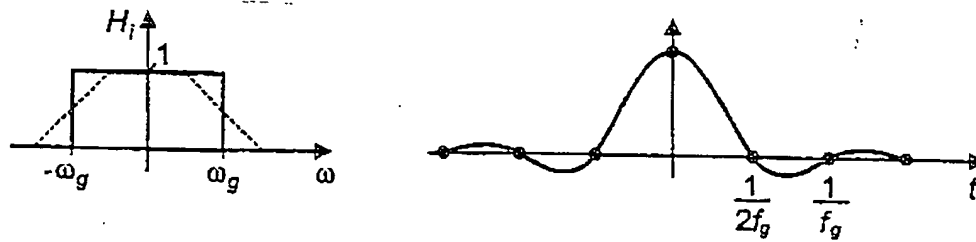


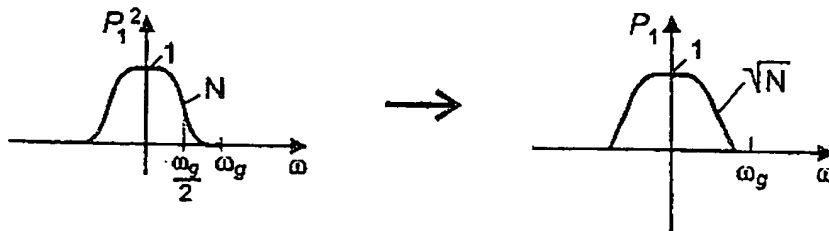
Fig. 3c

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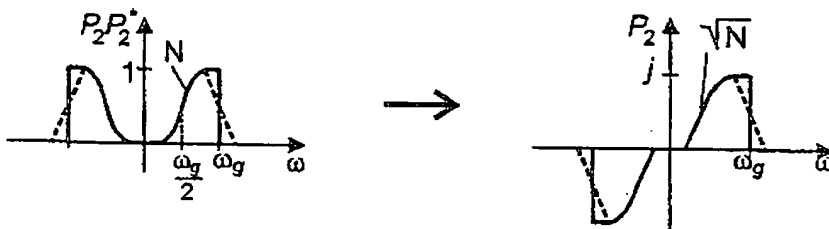
The starting point here is the ideal low-pass



Step 1: Select P_1^2 in such a manner that the zero points are at a multiple of $1/f_g$ and determine P_1

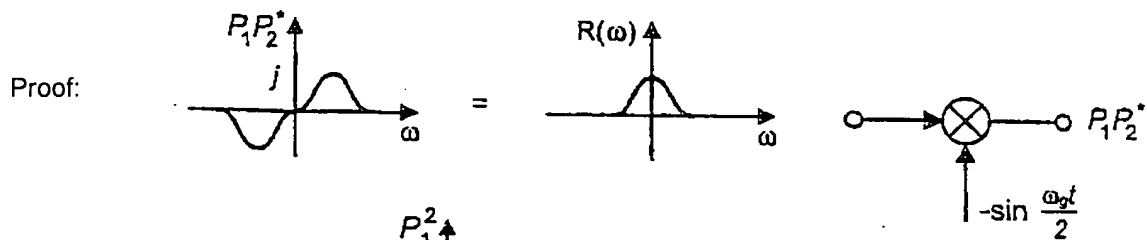


Step 2: Select $P_{2m} = P_2 P_2^*$ as $P_{2m} = H_i - P_1^2$ and from that P_2

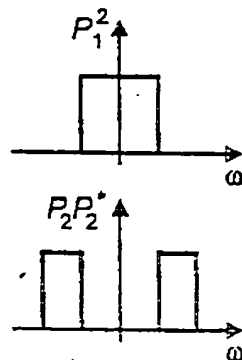


Both filters have Nyquist flanks

$P_1 P_2^*$ or $P_2 A P_1^*$ are symmetrical to $\omega_g/2 \leadsto$ no cross-talk



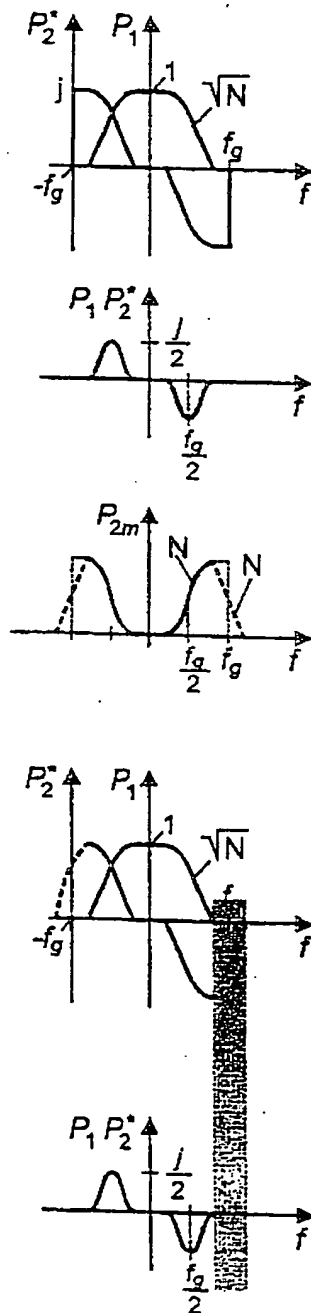
Special case:



FDM

Fig. 4

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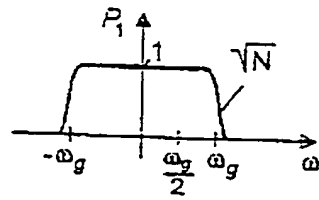
Zeros at multiples of $1/f_g \rightarrow$ no cross-talk

Avoidance of perpendicular flanks by means of Nyquist flank

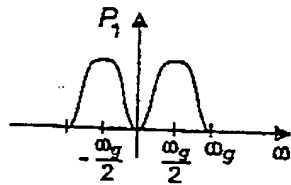
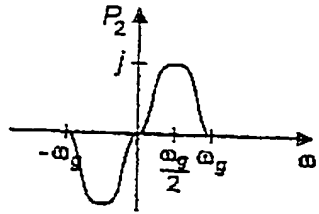
No cross-talk if P_1 does not fall into the Nyquist flank N at f_g

Fig. 5

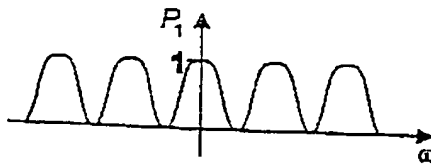
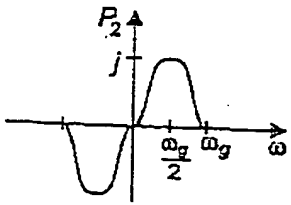
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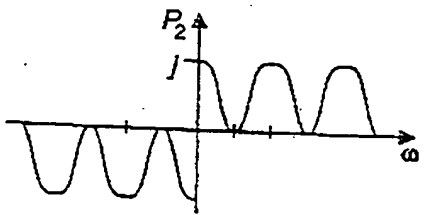
Example d



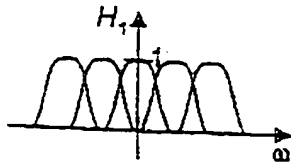
Example e



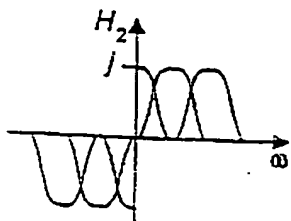
Example f



Multi-carrier system



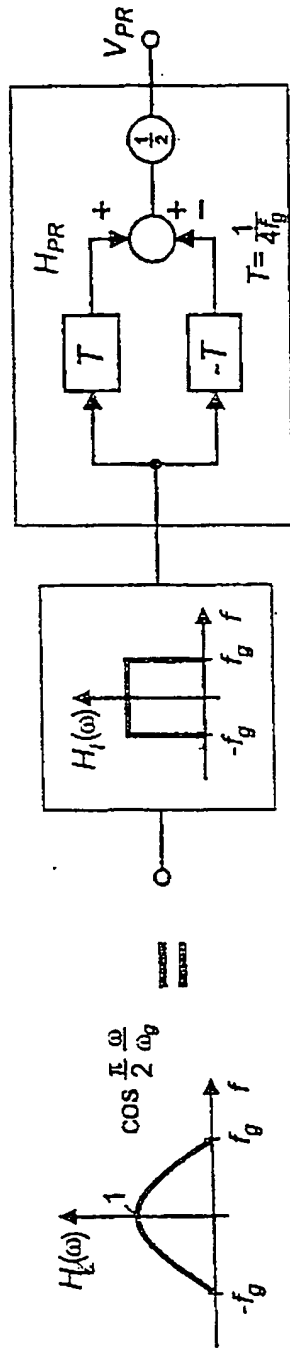
Example g



Multi-carrier system

Fig. 6

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Pulse formation

$$\frac{e^{j\omega T} + e^{-j\omega T}}{2} = \cos \omega T$$

$$\frac{e^{j\omega T} - e^{-j\omega T}}{2} = j \sin \omega T$$

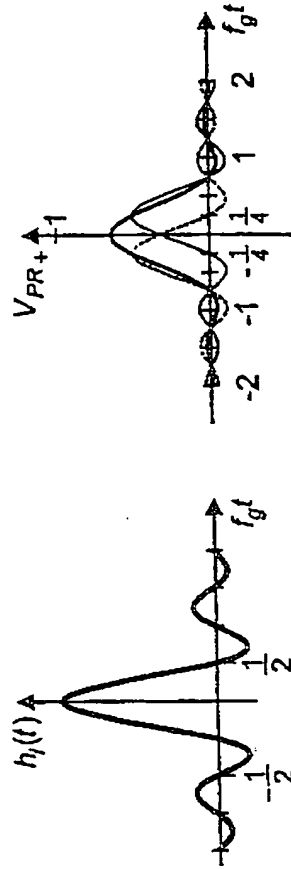


Fig. 7

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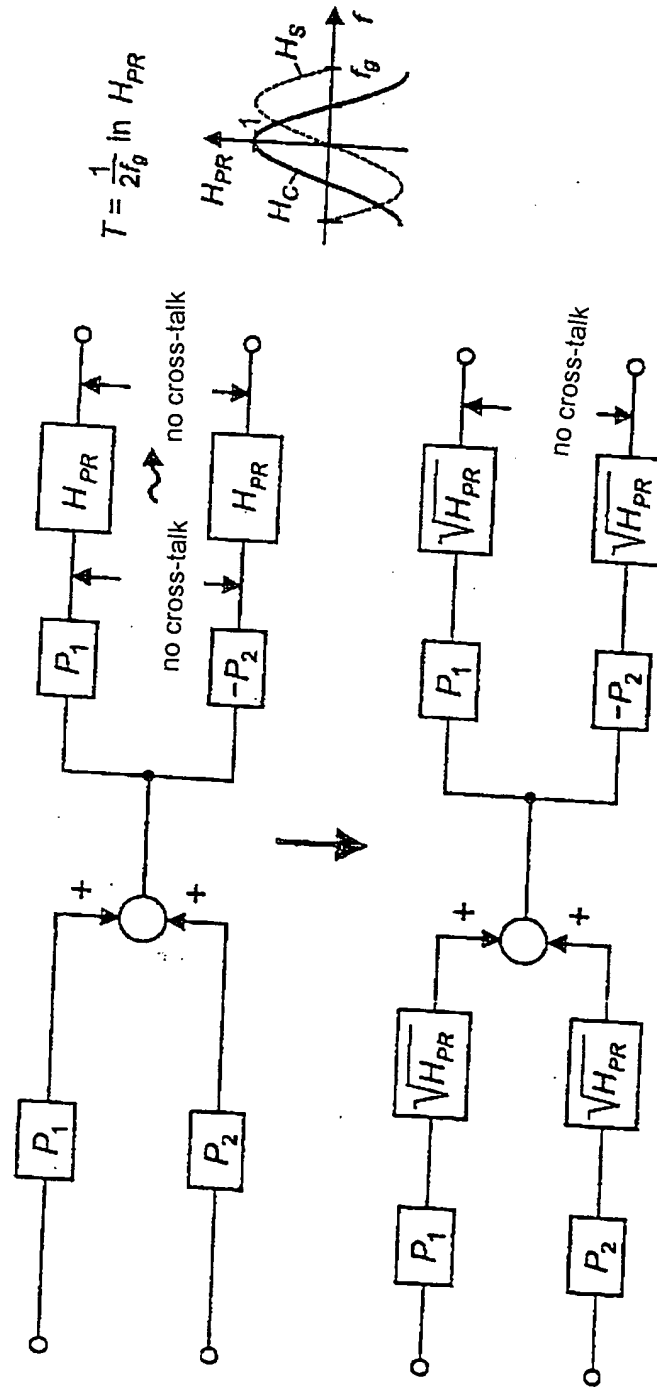


Fig. 8

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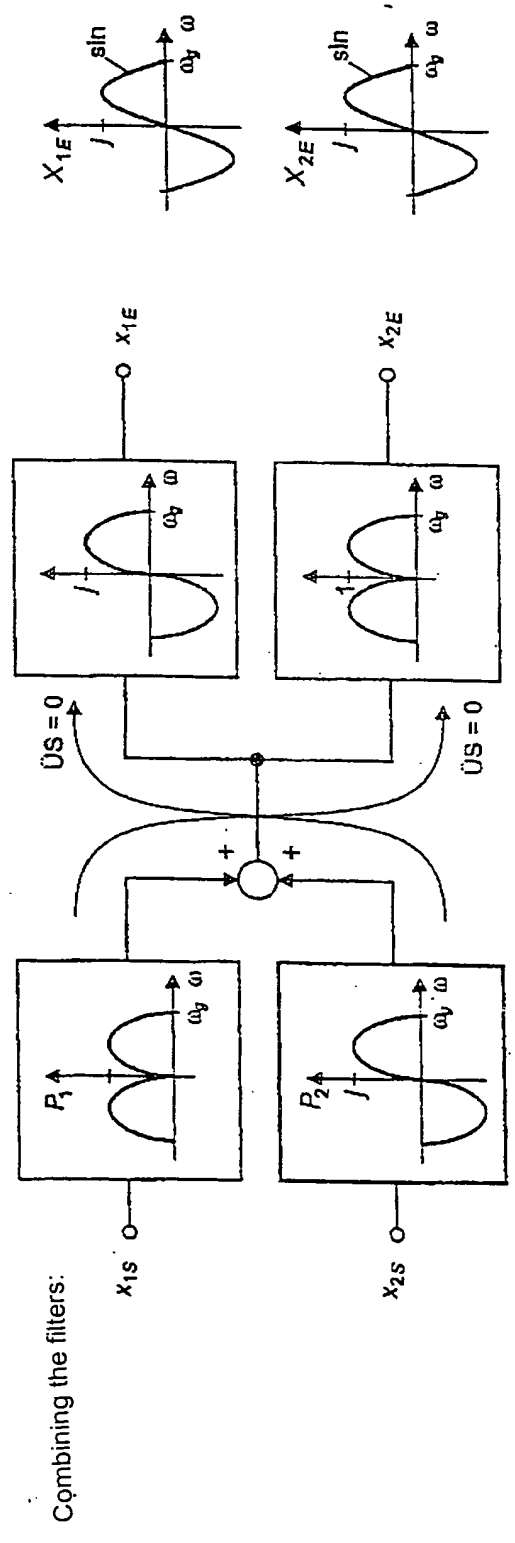
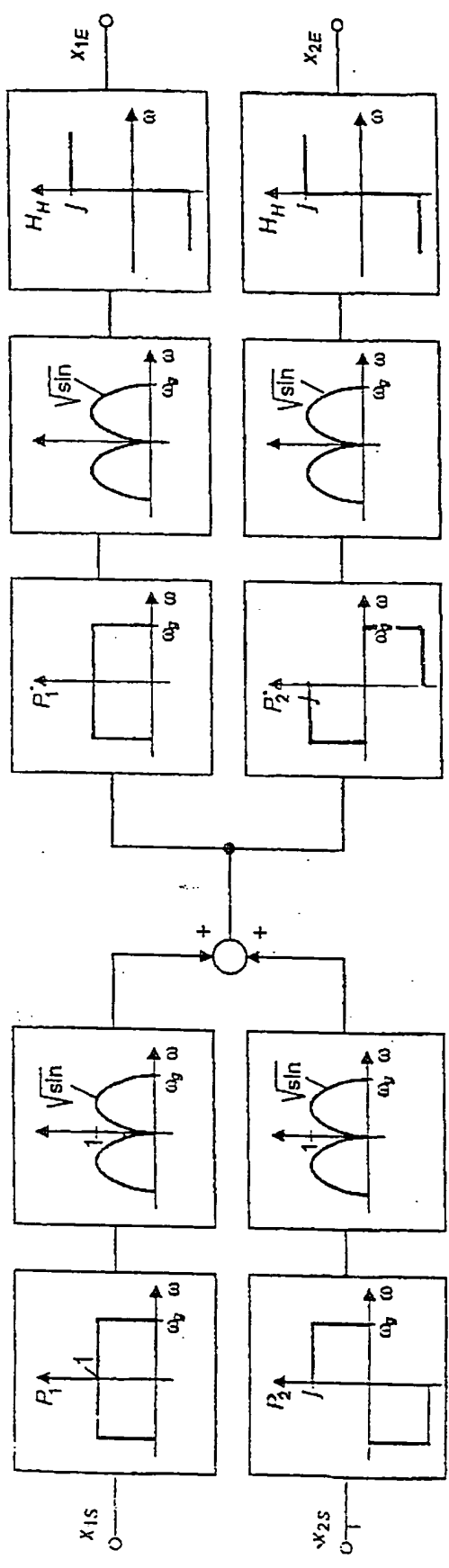
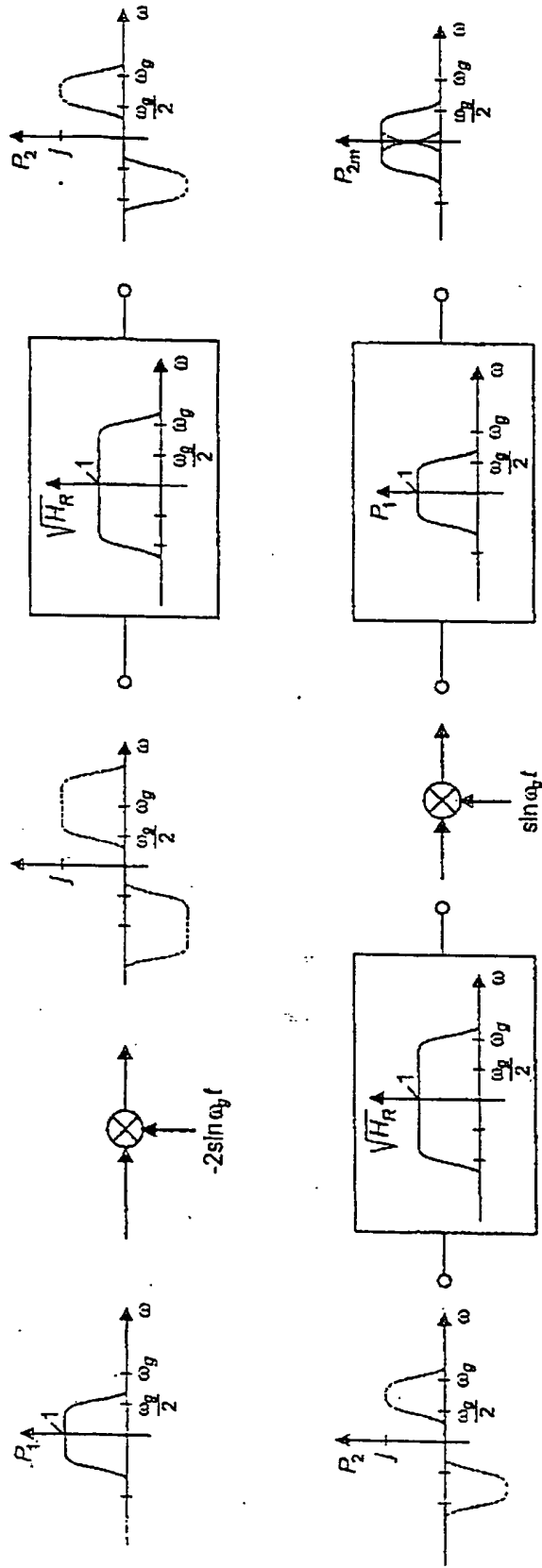


Fig. 9

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Alternative Demodulation:

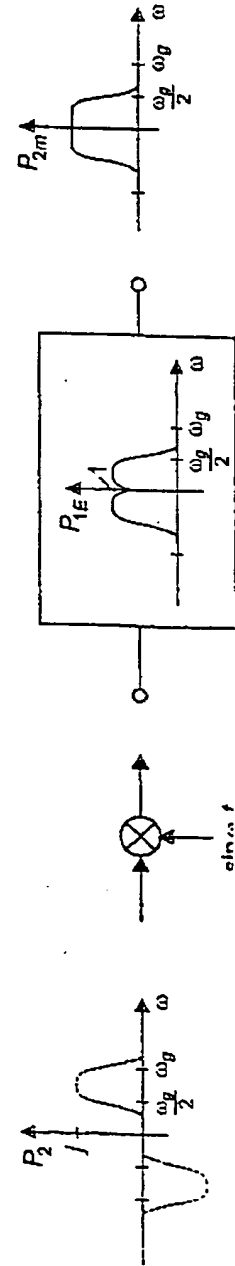


Fig. 10

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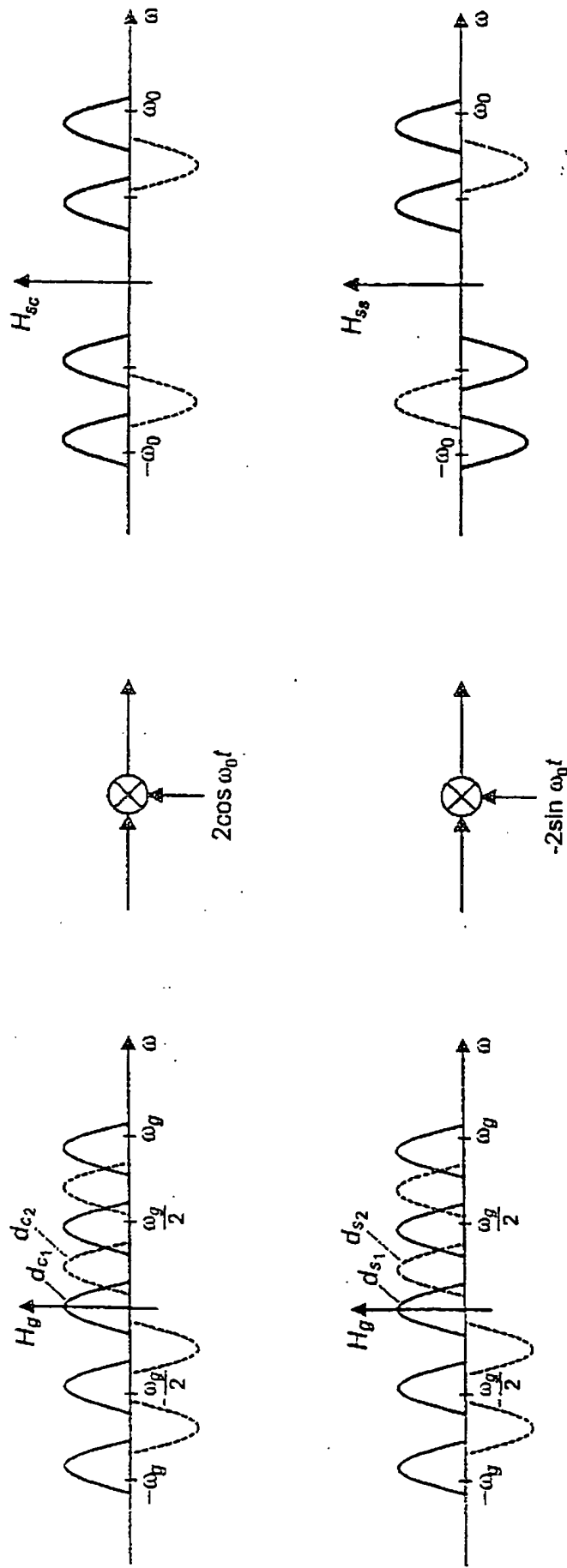


Fig. 12

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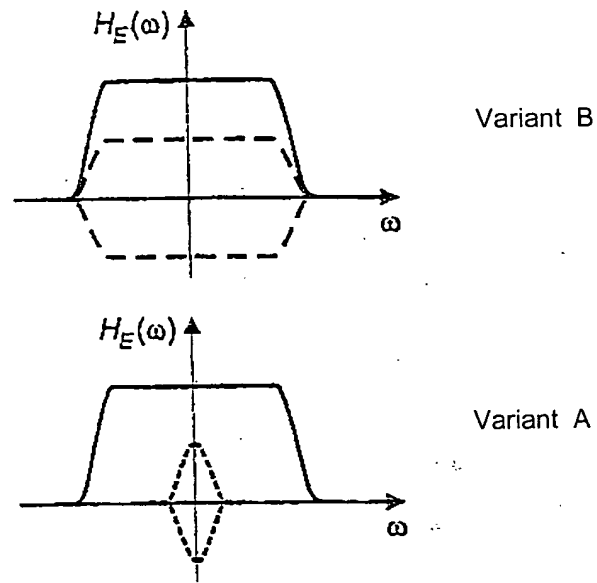


Fig. 13

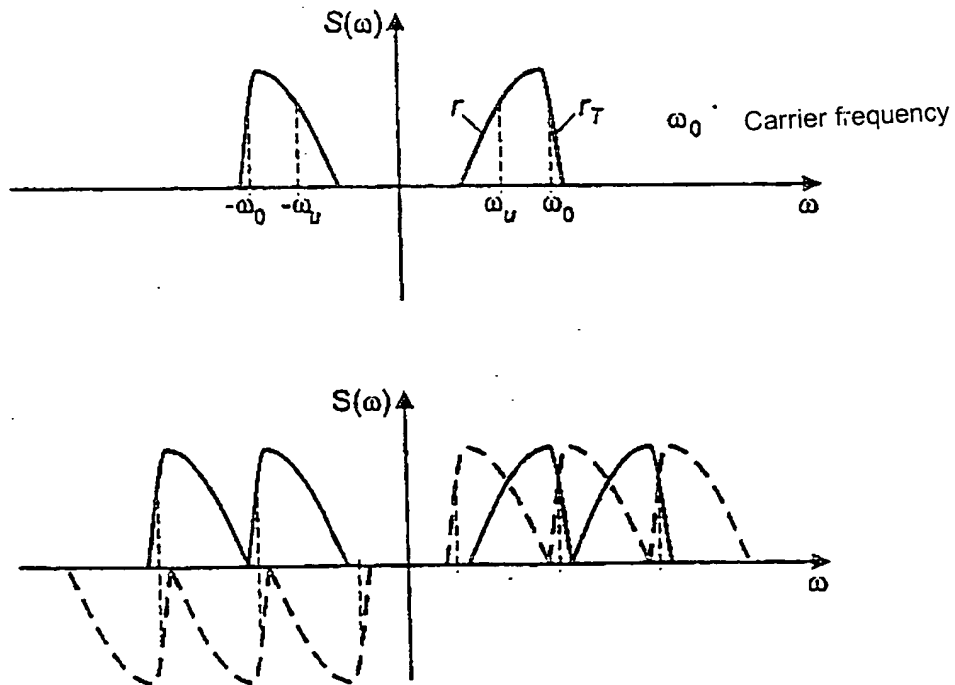


Fig. 14

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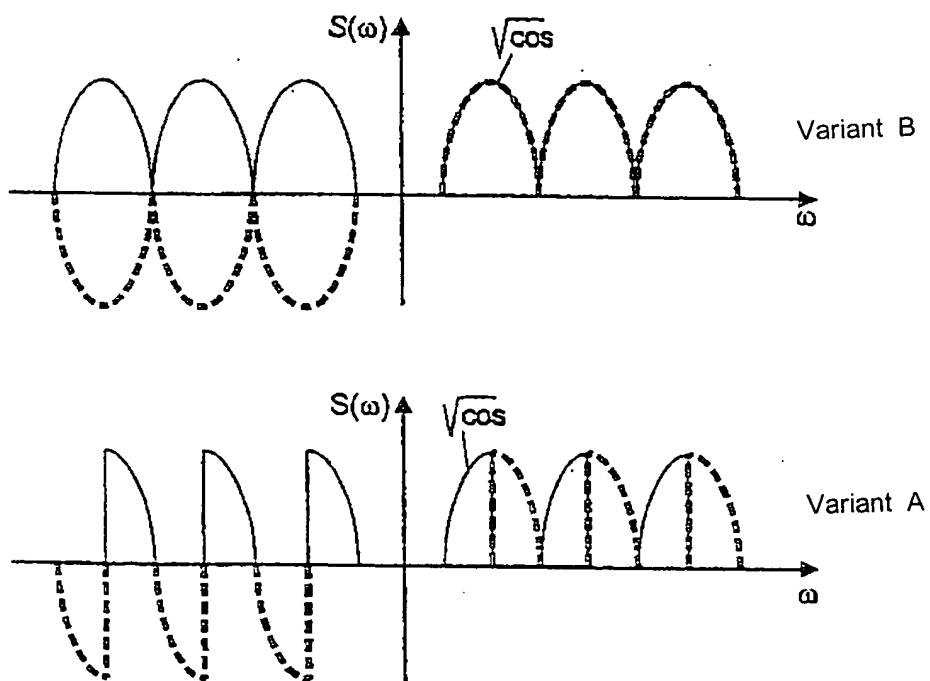


Fig. 15

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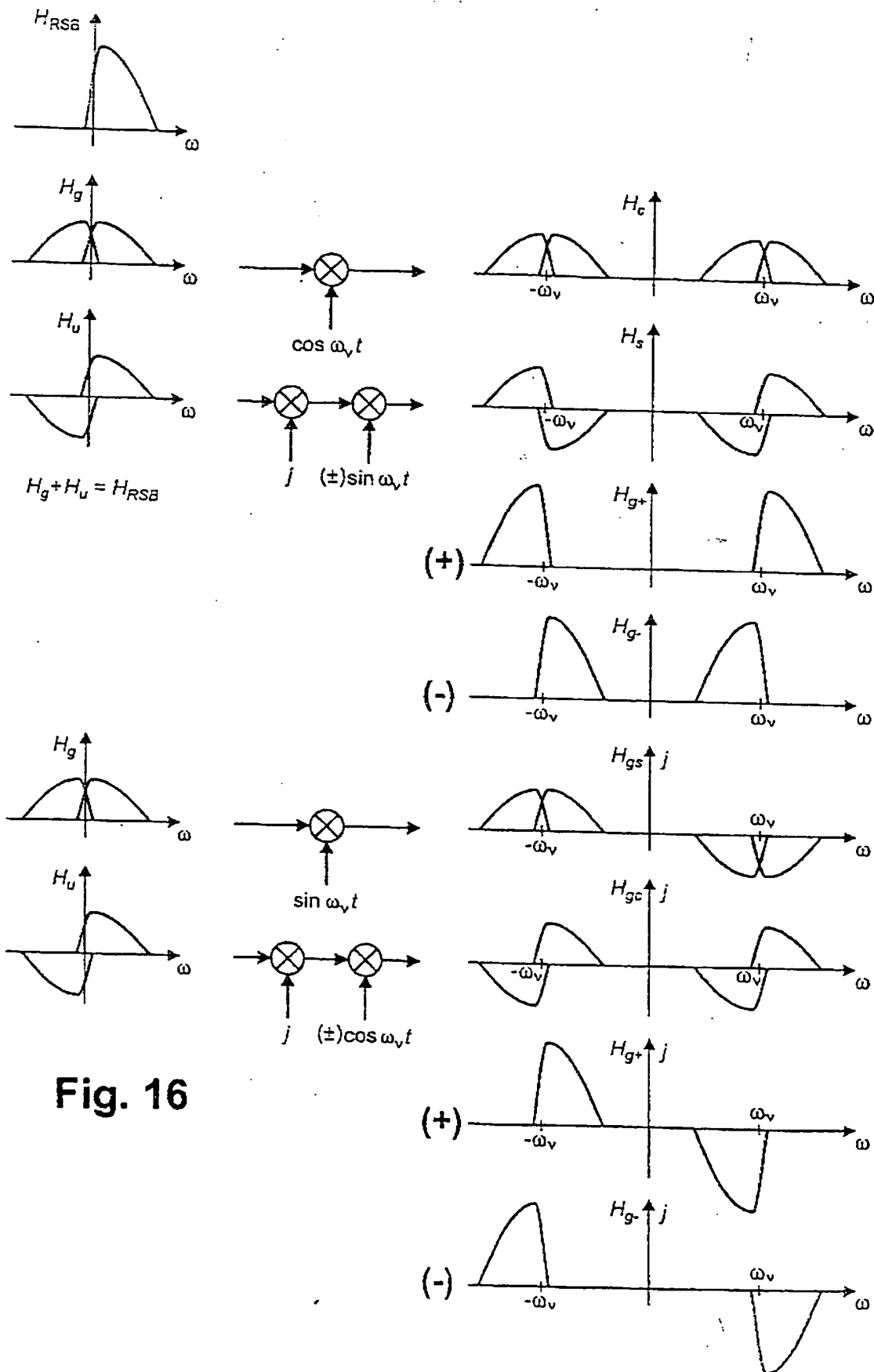


Fig. 16

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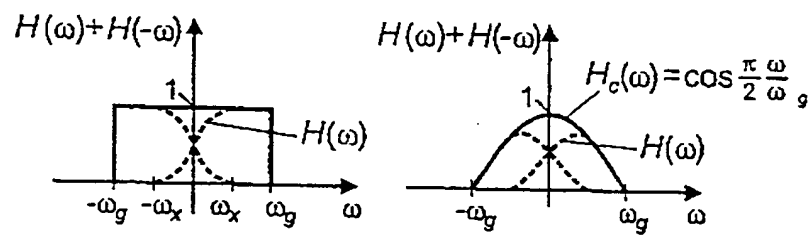


Fig. 17